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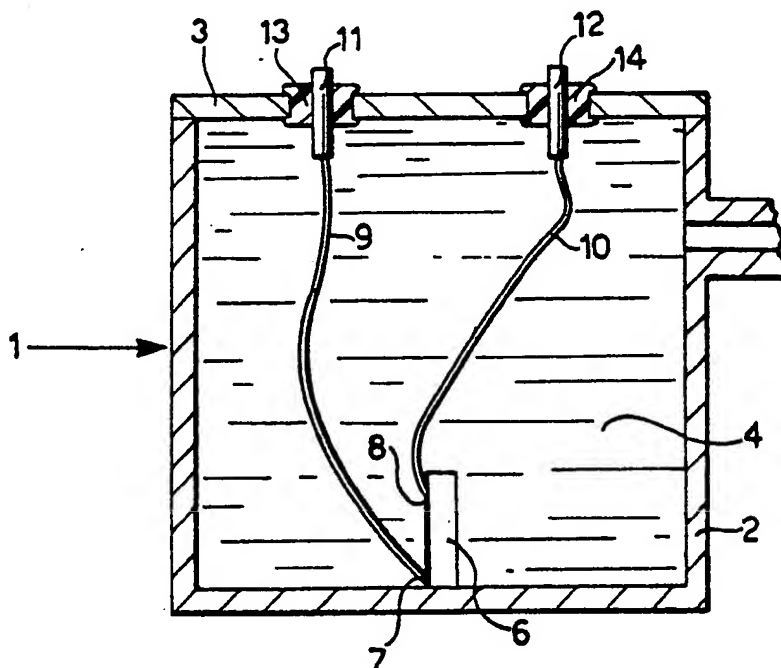
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(58) Field of search
G1N
H1K
Selected US specifications from IPC sub-class H01L

(54) Device and method for measuring the static pressure of a fluid

(57) A device for measuring the static pressure of a fluid (4) comprises a support (6) for immersion in the fluid (4) whose static pressure is to be measured. This support (6) carries at least one sensitive element constituted by a thick-film resistor the electrical resistance of which is a function of the static pressure of the fluid.

FIG. 1



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FIG. 1

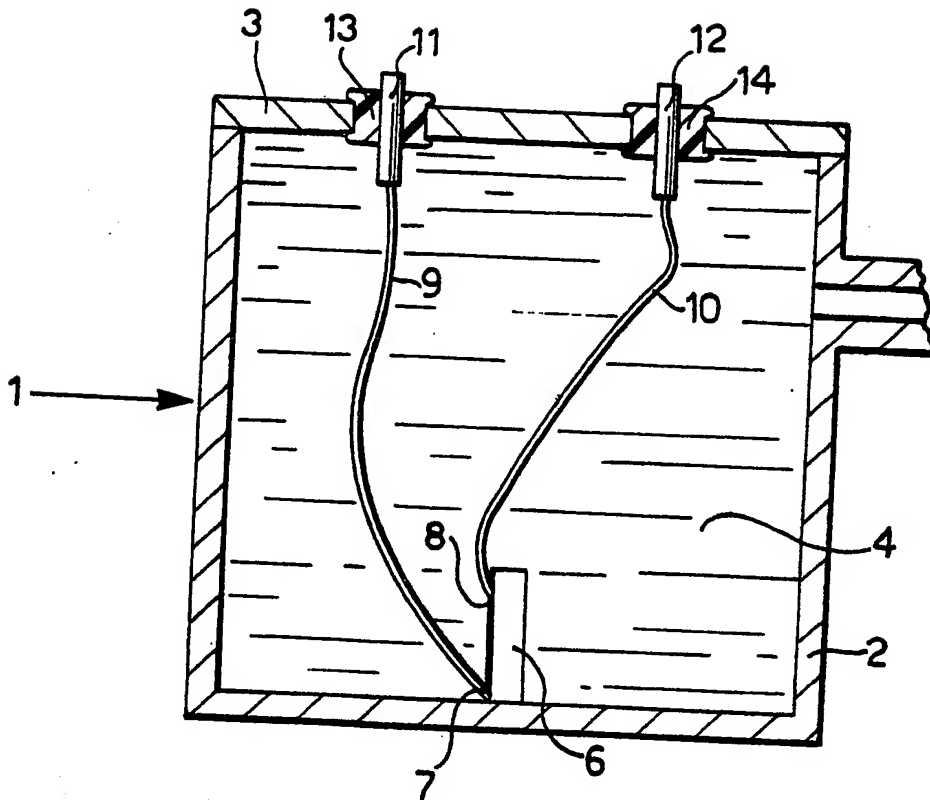
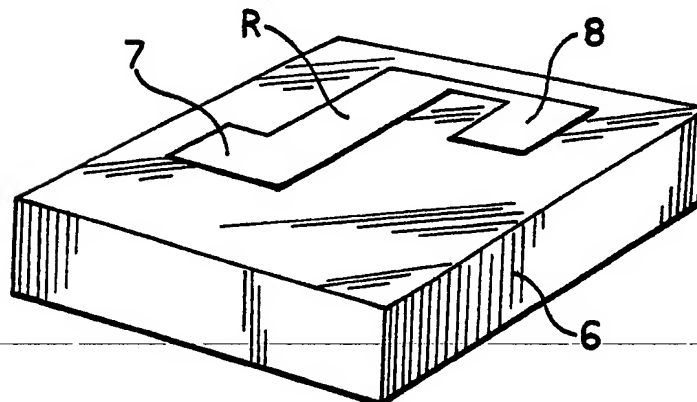


FIG. 2



SPECIFICATION

Device and method for measuring the static pressure of a fluid

- 5 The present invention relates to an electrical device for detecting the static pressure of a fluid.
- The detector device according to the present invention is characterised in that it comprises a support intended for immersion in the fluid and
- 10 carrying at least one sensitive element having an electrical characteristic which is variable in dependence on the static pressure of the fluid, the sensitive element being constituted by a thick-film resistor.
- 15 The invention also relates to a method for measuring the static pressure of a fluid in an environment.
- The method of the invention is characterised in that it comprises the steps of:
- 20 introducing a support carrying at least one thick-film resistor into the environment, and measuring the electrical resistance of the thick-film resistor.
- Further characteristics and advantages of the invention will become apparent from the detailed description which follows with reference to the appended drawings, provided purely by way of non-limiting example, in which:
- 25 Figure 1 is a sectional view of a container for a pressurised hydraulic fluid, provided with a detector device according to the invention, and
- 30 Figure 2 is a perspective view of a part of the detector device of the invention.
- With reference to Figure 1, a container, generally indicated 1, comprises a cup-shaped body 2 having an upper cover 3 clamped sealingly to its edge in known manner. A fluid, indicated 4 in Figure 1, fills the container 2.
- 35 A support body 6 is immersed in the container and is constituted, for example, by a quadrilateral plate of the ceramics material. As shown more clearly in Figure 2, a thick-film resistor R is deposited on the support by silk-screen printing and is provided with terminal rheophores constituted by
- 40 metallizations 7 and 8, also deposited by the thick-film technique.
- The rheophores 7 and 8 of the thick-film resistor R are connected by connecting conductors 9 and 10 to conductive bars 11 and 12 fixed sealingly in
- 45 apertures 13 and 14 in the cover 3 of the container 2.
- The resistor R may be connected through the terminals 11 and 12 to an electrical measuring circuit, for example a Wheatstone bridge, by means of which it is possible to measure its electrical
- 50 resistance.
- 55

60 The inventor has been able to show, surprisingly, that the electrical resistance of a thick-film resistor has a good coefficient of variation in dependence on the static pressure of the fluid in which the resistor is immersed. In particular, from tests carried out, it has been possible to show a variation in resistance of the order of 0.3% for variations of 100 bars in the static pressure of the fluid. In other words, it is possible to obtain resistance variations of the order of several ohms for a variation in the static pressure of one bar.

65 The detector device according to the invention may thus be used conveniently for measuring the static pressure of hydraulic fluids at high pressures, for example, of the order of 1000 bars. The device may be used, for example, to monitor the static pressure of diesel fuel in the delivery section of the pump of a diesel engine which, as known, may reach values of the order of about 200 bars.

70 Although the position of the support 6 within the container 2 is not critical for the purpose of the measurement, it is convenient for the support to be fixed to the container 2, in any known manner.

75 The sensitivity of the measurement may be increased by the use of a plurality of thick-film resistors applied to the same support.

80 Naturally, the principle of the invention remaining the same, the forms of embodiments and details of realization may be varied widely with respect to that described and illustrated purely by way of non-limiting example, without thereby departing from the scope of the present invention.

CLAIMS

- 85
- 90 1. An electrical device for detecting the static pressure of a fluid, which comprises a support intended for immersion in the fluid and carrying at least one sensitive element having an electrical characteristic which varies in dependence on the static pressure of the fluid, the sensitive element being constituted by a thick-film resistor.
- 95 2. A method of measuring the static pressure of a fluid in an environment, which includes the steps of: introducing a support carrying at least one thick-film resistor into the environment, and measuring the electrical resistance of the thick-film resistor.
- 100 3. A device for detecting the static pressure of a fluid, substantially as herein described with reference to, and as shown in the accompanying drawings.
- 105 4. A method of measuring the static pressure of a fluid, substantially as herein described with reference to, and as shown in, the accompanying drawings.

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